

AMENDMENTS TO THE CLAIMS

Pursuant to 37 C.F.R. §1.121 the following is a complete listing of the claims of the present application:

Listing of claims:

1-87. (Canceled)

88. (Currently amended) An isolated antibody or antigen-binding fragment thereof which specifically binds to a polypeptide, wherein said polypeptide is encoded by a first polynucleotide capable of binding under conditions of high stringency to a second polynucleotide selected from the group consisting of fully complementary sequences to any of SEQ ID NOS: 1, 5, 9, 11, 13, and 15, and fully complementary sequences thereto,

wherein the high stringency conditions comprise prewashing in 60 mM Tris pH 8.0, 2 mM EDTA, 5x Denhardt's, 6x SSC, 0.1% (w/v) N-laurylsarcosine, 0.5% (w/v) NP-40® (nonidet P-40) overnight at 45°C, followed by two washes with 0.2x SSC containing 0.1% SDS at 45-50°C; and

wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to alter decrease bone mineral content density.

89. (Currently amended) An isolated antibody or antigen binding fragment thereof which specifically binds to a [[a]] polypeptide encoded by a polynucleotide having at least 90% identity to a full-length polynucleotide sequence selected from the group consisting of SEQ ID NOS: 1, 5, 9, 11, 13 [,] and 15 , or a complementary sequence thereto, wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to alter decrease bone mineral content density.

90. (Canceled)

91. (Previously Presented) The antibody or antigen binding fragment thereof of either claim 88 or claim 89 wherein the isolated antibody or binding fragment thereof is a polyclonal antibody.

92. (Previously Presented) The antibody or antigen binding fragment thereof of either claim 88 or claim 89 wherein the isolated antibody or binding fragment thereof is a monoclonal antibody.

93. (Previously Presented) The antibody or antigen binding fragment thereof of either claim 88 or claim 89 wherein the isolated antibody or binding fragment thereof is a humanized antibody.

94. (Previously Presented) The antibody or antigen binding fragment thereof of either claim 88 or claim 89 wherein the antibody or antigen binding fragment has an affinity of at least 10^7 M.

95. (Previously Presented) The antibody or antigen binding fragment thereof of either claim 88 or claim 89 wherein the antibody or antigen binding fragment has an affinity of at least 10^8 M.

96. (Previously Presented) A hybridoma that produces an antibody according to either claim 88 or claim 89.

97. (Withdrawn/Currently amended) A method of producing monoclonal antibodies, comprising immunizing an animal with a protein comprising a polypeptide selected from the group consisting of (i) a polypeptide, or portion thereof, that is encoded by a polynucleotide that comprises a nucleotide sequence selected from SEQ ID NOs:1, 5, 7, 9, 11, 13, and 15, ~~or a complementary sequence thereto~~, and (ii) a polypeptide that comprises an amino acid sequence selected from SEQ ID NOs: 2, 6, 8, 10, 12, 14, and 16, wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to alter decrease bone mineral content density.

98. (Withdrawn) A method for production of an antibody according to either claim 88 or claim 89 comprising culturing hybridoma cells under conditions that permit the production of said antibody.

99. (Withdrawn) A method for production of an antibody or binding fragment thereof of either claim 88 or claim 89, comprising:

(a) providing a recombinant host cell capable of producing said antibody or binding fragment thereof; and

(b) culturing said cell under conditions that permit the production of said antibody or binding fragment.

100. (Withdrawn/Currently amended) A method for immunizing an animal to produce a cell capable of expressing an antibody that binds to a polypeptide, comprising injecting into an animal said polypeptide, or portion thereof, wherein said polypeptide is selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide that comprises a nucleotide sequence selected from SEQ ID NOs: 1, 5, 7, 9, 11, 13, and 15, or a complementary sequence thereto; and

(ii) a polypeptide that comprises an amino acid sequence selected from SEQ ID NOs: 2, 6, 8, 10, 12, 14, and 16,

wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to alter decrease bone mineral content density.

101. (New) A polypeptide comprising an antibody, or an antibody fragment thereof, wherein the polypeptide binds to a portion of SEQ ID NO: 2 with an affinity K_a of greater than or equal to $10^7 M^{-1}$.

102. (New) A polypeptide comprising an antibody, or an antibody fragment thereof, wherein the polypeptide binds with an affinity K_a of greater than or equal to $10^7 M^{-1}$ to a polypeptide encoded by a naturally occurring polynucleotide that (i) encodes a protein that decreases bone mineral content and (ii) is capable of hybridizing under stringent conditions to a SEQ ID NO: 1 or the complement thereof, wherein the conditions comprise prewashing in 60 mM Tris pH 8.0, 2 mM EDTA, 5x Denhardt's, 6x SSC, 0.1% (w/v) N-

laurylsarcosine, 0.5% (w/v) NP-40® (nonidet P-40) overnight at 45°C, followed by two washes with 0.2x SSC containing 0.1% SDS at 45-50°C.

103. (New) The polypeptide of claim 101, further comprising an effector or reporter molecule.

104. (New) The polypeptide of claim 103, wherein the effector or reporter molecule is selected from the group consisting of antineoplastic agents, toxins, biologically active proteins and fragments thereof, enzymes and fragments thereof, nucleic acids and fragments thereof, naturally occurring and synthetic polymers and derivatives thereof, radionuclides, chelated metals, fluorescent compounds and compounds which may be detected by NMR or ESR spectroscopy.

105. (New) The polypeptide of claim 101, wherein the antibody fragment is selected from the group consisting of F(ab')₂, F(ab)₂, Fab', Fab, and Fv.

106. (New) The polypeptide of claim 101, wherein the antibody is selected from the group consisting of murine monoclonal antibodies, human monoclonal antibodies, humanized monoclonal antibodies, and antibody fragments thereof.

107. (New) A method of increasing bone mineral content in a human comprising administering to the human (a) the polypeptide of claim 101 in an amount effective to increase bone mineral content and (b) an inhibitor of bone resorption.

108. (New) The method of claim 107, wherein the inhibitor of bone resorption is selected from the group consisting of calcitonin, estrogen, a bisphosphonate, a growth factor having anti-resorptive activity and tamoxifen.

109. (New) The method of claim 107, wherein the inhibitor of bone resorption is a bisphosphonate.